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|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------|-------------|-------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|----------------------|---------------------------------------------------------------------------------------|---------|----|
| Applicable standard                                                                                                                                                                                                   |                             |                                                                                                                                                                                                        |         |         |             |                                                                                                                         |                                               |                      |                                                                                       |         |    |
| Rating                                                                                                                                                                                                                | Operating temperature range | -55°C to + 85°C(Note 1)                                                                                                                                                                                |         |         |             | Storage temperature range                                                                                               | -10°C to + 60°C(Note2)                        |                      |                                                                                       |         |    |
|                                                                                                                                                                                                                       | Operating humidity range    | 20% to 80% (Note3)                                                                                                                                                                                     |         |         |             | Storage humidity range                                                                                                  | 40% to 70%(Note2)                             |                      |                                                                                       |         |    |
|                                                                                                                                                                                                                       | Voltage                     | 1000V AC/DC                                                                                                                                                                                            |         |         |             | Applicable Connector                                                                                                    | DF22L -*S-7.92C(28)<br>DF22#L-*S-7.92C(#=B,C) |                      |                                                                                       |         |    |
|                                                                                                                                                                                                                       | Current(*1)                 | Contact                                                                                                                                                                                                | 1       | 2,3     | 4,5         | Current(*2)                                                                                                             | Contact                                       | 1                    | 2,3                                                                                   | 4,5     |    |
|                                                                                                                                                                                                                       |                             | AWG10                                                                                                                                                                                                  | 43A/pin | 38A/pin | 33A/pin     |                                                                                                                         | AWG10                                         | 30A/pin              | 25A/pin                                                                               | 22A/pin |    |
|                                                                                                                                                                                                                       |                             | AWG12                                                                                                                                                                                                  | 38A/pin | 32A/pin | 26A/pin     |                                                                                                                         | AWG12                                         | 25A/pin              | 20A/pin                                                                               | 18A/pin |    |
|                                                                                                                                                                                                                       |                             | AWG14                                                                                                                                                                                                  | 26A/pin | 23A/pin | 22A/pin     |                                                                                                                         | AWG14                                         | 20A/pin              | 18A/pin                                                                               | 15A/pin |    |
|                                                                                                                                                                                                                       |                             | AWG16                                                                                                                                                                                                  | 21A/pin | 21A/pin | 19A/pin     |                                                                                                                         | AWG16                                         | 15A/pin              | 15A/pin                                                                               | 13A/pin |    |
| Rated voltage                                                                                                                                                                                                         |                             | Rated current                                                                                                                                                                                          |         |         |             | Overvoltage category                                                                                                    |                                               | IP-Protection method |                                                                                       |         |    |
| UL                                                                                                                                                                                                                    | AC 600V                     | See above(*1) (At ambient temp.25°C) (Note 4)                                                                                                                                                          |         |         |             | —                                                                                                                       |                                               | —                    |                                                                                       |         |    |
| C-UL                                                                                                                                                                                                                  | AC 600V                     | See above(*2) (Temp. rise up 30°C MAX)                                                                                                                                                                 |         |         |             | —                                                                                                                       |                                               | —                    |                                                                                       |         |    |
| TÜV                                                                                                                                                                                                                   | AC 600V                     | See above(*2)                                                                                                                                                                                          |         |         |             | II                                                                                                                      |                                               | IPOO                 |                                                                                       |         |    |
| Specifications                                                                                                                                                                                                        |                             |                                                                                                                                                                                                        |         |         |             |                                                                                                                         |                                               |                      |                                                                                       |         |    |
| Item                                                                                                                                                                                                                  |                             | Test method                                                                                                                                                                                            |         |         |             | Requirements                                                                                                            |                                               |                      |                                                                                       | QT      | AT |
| Construction                                                                                                                                                                                                          |                             |                                                                                                                                                                                                        |         |         |             |                                                                                                                         |                                               |                      |                                                                                       |         |    |
| General examination                                                                                                                                                                                                   |                             | Visually and by measuring instrument.                                                                                                                                                                  |         |         |             | According to drawing.                                                                                                   |                                               |                      |                                                                                       | X       | X  |
| Marking                                                                                                                                                                                                               |                             | Confirmed visually.                                                                                                                                                                                    |         |         |             |                                                                                                                         |                                               |                      |                                                                                       | X       | X  |
| Electric characteristics                                                                                                                                                                                              |                             |                                                                                                                                                                                                        |         |         |             |                                                                                                                         |                                               |                      |                                                                                       |         |    |
| Contact resistance millivolt level method                                                                                                                                                                             |                             | 20mV MAX, 1mA (DC OR 1000 Hz).                                                                                                                                                                         |         |         |             | 5 mΩ MAX.                                                                                                               |                                               |                      |                                                                                       | X       | —  |
| Insulation resistance                                                                                                                                                                                                 |                             | 1000V DC.                                                                                                                                                                                              |         |         |             | 1000MΩ MIN.                                                                                                             |                                               |                      |                                                                                       | X       | —  |
| Voltage proof                                                                                                                                                                                                         |                             | 2500V AC for 1 min.                                                                                                                                                                                    |         |         |             | No flashover or breakdown.                                                                                              |                                               |                      |                                                                                       | X       | —  |
| Mechanical characteristics                                                                                                                                                                                            |                             |                                                                                                                                                                                                        |         |         |             |                                                                                                                         |                                               |                      |                                                                                       |         |    |
| Mechanical operation                                                                                                                                                                                                  |                             | 50times insertions and extractions.                                                                                                                                                                    |         |         |             | 1) Contact resistance: 10mΩ MAX.<br>2) No damage, crack or looseness of parts.                                          |                                               |                      |                                                                                       | X       | —  |
| Vibration                                                                                                                                                                                                             |                             | Frequency 10 to 55 Hz, single amplitude 0.75 mm, at 2 h, for 3 directions.                                                                                                                             |         |         |             | 1) No electrical discontinuity of 1μs.<br>2) No damage, crack or looseness of parts.                                    |                                               |                      |                                                                                       | X       | —  |
| Shock                                                                                                                                                                                                                 |                             | 490 m/s <sup>2</sup> duration of pulse 11 ms at 3 times for 3 directions.                                                                                                                              |         |         |             | 1) No electrical discontinuity of 1μs.<br>2) No damage, crack or looseness of parts.                                    |                                               |                      |                                                                                       | X       | —  |
| Environmental characteristics                                                                                                                                                                                         |                             |                                                                                                                                                                                                        |         |         |             |                                                                                                                         |                                               |                      |                                                                                       |         |    |
| Rapid change of temperature                                                                                                                                                                                           |                             | Temperature -55→ 5 to 35→+85→ 5 TO 35 °C<br>Time 30→ 5 MAX → 30→ 5 MAX min<br>Under 5 cycles.                                                                                                          |         |         |             | 1) Contact resistance: 10mΩ MAX.<br>2) Insulation resistance: 1000MΩ MIN.<br>3) No damage, crack or looseness of parts. |                                               |                      |                                                                                       | X       | —  |
| Damp heat (Steady state)                                                                                                                                                                                              |                             | Exposed at 40 ± 2 °C, 90 to 95 %, 96 h.                                                                                                                                                                |         |         |             | 1) Contact resistance: 10mΩ MAX.<br>2) Insulation resistance: 500MΩ MIN.<br>3) No damage, crack or looseness of parts.  |                                               |                      |                                                                                       | X       | —  |
| Resistance to soldering heat                                                                                                                                                                                          |                             | 1) Solder bath method<br>Solder temperature : 260°C for Immersion, duration: 10 sec.<br>2) Manual soldering<br>Soldering iron temperature : 350°C<br>Soldering time: 3 sec.<br>No strength on contact. |         |         |             | No deformation of case of excessive looseness of the terminals.                                                         |                                               |                      |                                                                                       | X       | —  |
| Solderability                                                                                                                                                                                                         |                             | Soldered at solder temperature, 245°C for insertion duration, 5sec.                                                                                                                                    |         |         |             | Solder shall cover a minimum of 95 % of the surface being immersed.                                                     |                                               |                      |                                                                                       | X       | —  |
| Remarks                                                                                                                                                                                                               |                             |                                                                                                                                                                                                        |         |         |             |                                                                                                                         |                                               |                      |                                                                                       |         |    |
| Note1: Including the temperature rising by current.                                                                                                                                                                   |                             |                                                                                                                                                                                                        |         |         |             |                                                                                                                         |                                               |                      |                                                                                       |         |    |
| Note2: No condensing.                                                                                                                                                                                                 |                             |                                                                                                                                                                                                        |         |         |             |                                                                                                                         |                                               |                      |                                                                                       |         |    |
| Note3: Apply to the condition of long term storage for unused products before mounted on PCB.<br>After mounted on PCB, operation temperature and humidity range is applied for interim storage during transportation. |                             |                                                                                                                                                                                                        |         |         |             |                                                                                                                         |                                               |                      |                                                                                       |         |    |
| Note4: Indicates the current that corresponds to the RTI value (temperature at which performance is halved) of the resin when the ambient temperature is 25°C.                                                        |                             |                                                                                                                                                                                                        |         |         |             |                                                                                                                         |                                               |                      |                                                                                       |         |    |
|                                                                                                                                                                                                                       | Count                       | Description of revisions                                                                                                                                                                               |         |         |             | Designed                                                                                                                |                                               | Checked              |                                                                                       | Date    |    |
|                                                                                                                                    |                             |                                                                                                                                                                                                        |         |         |             |                                                                                                                         |                                               |                      |                                                                                       |         |    |
| Unless otherwise specified, refer to IEC 60512.                                                                                                                                                                       |                             |                                                                                                                                                                                                        |         |         |             | Approved                                                                                                                | HS. OKAWA                                     |                      | 20200310                                                                              |         |    |
|                                                                                                                                                                                                                       |                             |                                                                                                                                                                                                        |         |         |             | Checked                                                                                                                 | SZ. ONO                                       |                      | 20200310                                                                              |         |    |
|                                                                                                                                                                                                                       |                             |                                                                                                                                                                                                        |         |         |             | Designed                                                                                                                | SN. MIWA                                      |                      | 20200310                                                                              |         |    |
|                                                                                                                                                                                                                       |                             |                                                                                                                                                                                                        |         |         |             | Drawn                                                                                                                   | DS. HIROWATARI                                |                      | 20200306                                                                              |         |    |
| Note QT:Qualification Test AT:Assurance Test X:Applicable Test                                                                                                                                                        |                             |                                                                                                                                                                                                        |         |         | Drawing no. |                                                                                                                         | ELC-302132-53-00                              |                      |                                                                                       |         |    |
|                                                                                                                                    | Specification sheet         |                                                                                                                                                                                                        |         |         | Part no.    |                                                                                                                         | DF22L-*P-7. 92DSA (53)                        |                      |                                                                                       |         |    |
|                                                                                                                                                                                                                       | HIROSE ELECTRIC CO., LTD.   |                                                                                                                                                                                                        |         |         | Code no.    |                                                                                                                         | CL680                                         |                      |  | 1/1     |    |